

**WHAT IS CLAIMED IS:**

1. An isolated antibody, or an antigen-binding antibody fragment, that preferentially binds cell-associated CA 125/O772P polypeptide relative to shed CA 125/O772P polypeptide.
2. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment, in an ELISA Competition Assay, exhibits less than about 25% inhibition of binding to the peptide of Figure 1 in the presence of a 25-fold (weight/weight) excess of shed CA 125/O772P over the peptide of Figure 1.
3. The isolated antibody, or the antigen-binding antibody fragment, of Claim 2, wherein the antibody or antibody fragment, in an ELISA Competition Assay, exhibits less than about 20% inhibition of binding to the peptide of Figure 1 in the presence of a 25-fold (weight/weight) excess of shed CA 125/O772P over the peptide of Figure 1.
4. The isolated antibody, or the antigen-binding antibody fragment, of Claim 3, wherein the antibody or antibody fragment, in an ELISA Competition Assay, exhibits less than about 15% inhibition of binding to the peptide of Figure 1 in the presence of a 25-fold (weight/weight) excess of shed CA 125/O772P over the peptide of Figure 1.
5. The isolated antibody, or the antigen-binding antibody fragment, of Claim 4, wherein the antibody or antibody fragment, in an ELISA Competition Assay, exhibits less than about 10% inhibition of binding to the peptide of Figure 1 in the presence of a 25-fold (weight/weight) excess of shed CA 125/O772P over the peptide of Figure 1.
6. The isolated antibody, or the antigen-binding antibody fragment, of Claim 5, wherein the antibody or antibody fragment, in an ELISA Competition Assay, exhibits less than about 5% inhibition of binding to the peptide of Figure 1 in the presence of a 25-fold (weight/weight) excess of shed CA 125/O772P over the peptide of Figure 1.
7. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment, in a Flow Cytometry Assay, exhibits an  $IC_{50}$ , as measured by percent-positive cells, of at least about 0.05 mg/ml shed CA 125/O772P.

8. The isolated antibody, or the antigen-binding antibody fragment, of Claim 7, wherein the antibody or antibody fragment, in a Flow Cytometry Assay, exhibits an  $IC_{50}$ , as measured by percent-positive cells, of at least about 0.25 mg/ml shed CA 125/O772P.

9. The isolated antibody, or the antigen-binding antibody fragment, of Claim 8 wherein the antibody or antibody fragment, in a Flow Cytometry Assay, exhibits an  $IC_{50}$ , as measured by percent-positive cells, of at least about 0.5 mg/ml shed CA 125/O772P.

10. The isolated antibody, or the antigen-binding antibody fragment, of Claim 9, wherein the antibody or antibody fragment, in a Flow Cytometry Assay, exhibits an  $IC_{50}$ , as measured by percent-positive cells, of at least about 0.75 mg/ml shed CA 125/O772P.

11. The isolated antibody, or the antigen-binding antibody fragment, of Claim 10, wherein the antibody or antibody fragment, in a Flow Cytometry Assay, exhibits an  $IC_{50}$ , as measured by percent-positive cells, of at least about 1.0 mg/ml shed CA 125/O772P.

12. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment binds the peptide of Figure 1, but does not detectably bind shed CA 125/O772P.

13. The isolated antibody of Claim 1, wherein the antibody is an IgG class antibody.

14. The isolated antibody of Claim 13, wherein the antibody is an IgG<sub>1</sub> isotype.

15. The isolated antibody of Claim 1, wherein the antibody is a monoclonal antibody.

16. The isolated antibody of Claim 15, wherein the antibody is a chimeric monoclonal antibody.

17. The isolated antibody of Claim 16, wherein the chimeric monoclonal antibody comprises a C $\gamma$ 1 constant region.

18. The isolated antibody of Claim 16, wherein the chimeric monoclonal antibody comprises a C $\gamma$ 4 constant region.

19. The isolated antibody of Claim 1, wherein the antibody is a humanized monoclonal antibody.

20. The isolated antibody of Claim 15, wherein the antibody is a human monoclonal antibody.
21. The isolated antibody of Claim 1, wherein the antibody is a bi-specific antibody.
22. The isolated antibody of Claim 1, wherein the antibody is a multi-specific antibody.
23. The isolated antibody of Claim 1, wherein the antibody is a chimeric antibody.
24. The isolated antibody of Claim 1, wherein the antibody is a single chain antibody, a disulfide-linked F<sub>v</sub>s, a single chain F<sub>v</sub>s, or an anti-idiotypic antibody.
25. The antigen-binding antibody fragment of Claim 1, wherein the antigen-binding antibody fragment is a Fab fragment, a F(ab')<sub>2</sub> fragment, a VL-containing fragment, a VH-containing fragment, or a complementary-determining region (CDR)-containing fragment.
26. A monoclonal antibody produced by hybridoma 4E7 (ATCC<sup>®</sup> Accession No. PTA-5109), 7A11 (ATCC<sup>®</sup> Accession No. PTA-5110), 7C6 (ATCC<sup>®</sup> Accession No. PTA-5111), 7F10 (ATCC<sup>®</sup> Accession No. PTA-5112), 7G10 (ATCC<sup>®</sup> Accession No. PTA-5245), 7H1 (ATCC<sup>®</sup> Accession No. PTA-5114), 8A1 (ATCC<sup>®</sup> Accession No. PTA-5115), 8B5 (ATCC<sup>®</sup> Accession No. PTA-5116), 8C3 (ATCC<sup>®</sup> Accession No. PTA-5246), 8E3 (ATCC<sup>®</sup> Accession No. PTA-5118), 8G9 (ATCC<sup>®</sup> Accession No. PTA-5119), 15C9 (ATCC<sup>®</sup> Accession No. PTA-5106), 16C7 (ATCC<sup>®</sup> Accession No. PTA-5107), 16H9 (ATCC<sup>®</sup> Accession No. PTA-5108), 117.1 (ATCC<sup>®</sup> Accession No. PTA-4567), 325.1 (ATCC<sup>®</sup> Accession No. PTA-5120), 368.1 (ATCC<sup>®</sup> Accession No. PTA-4568), 446.1 (ATCC<sup>®</sup> Accession No. PTA-5549), 501.1 (ATCC<sup>®</sup> Accession No. PTA-4569), 621.1 (ATCC<sup>®</sup> Accession No. PTA-5121), 633.1 (ATCC<sup>®</sup> Accession No. PTA-5122), 654.1 (ATCC<sup>®</sup> Accession No. PTA-5247), 725.1 (ATCC<sup>®</sup> Accession No. PTA-5124), or 776.1 (ATCC<sup>®</sup> Accession No. PTA-4570).
27. A monoclonal antibody that competes with binding of the monoclonal antibody of Claim 26.
28. A hybridoma as deposited as hybridoma 4E7 (ATCC<sup>®</sup> Accession No. PTA-5109), 7A11 (ATCC<sup>®</sup> Accession No. PTA-5110), 7C6 (ATCC<sup>®</sup> Accession No. PTA-5111),

7F10 (ATCC<sup>®</sup> Accession No. PTA-5112), 7G10 (ATCC<sup>®</sup> Accession No. PTA-5245), 7H1 (ATCC<sup>®</sup> Accession No. PTA-5114), 8A1 (ATCC<sup>®</sup> Accession No. PTA-5115), 8B5 (ATCC<sup>®</sup> Accession No. PTA-5116), 8C3 (ATCC<sup>®</sup> Accession No. PTA-5246), 8E3 (ATCC<sup>®</sup> Accession No. PTA-5118), 8G9 (ATCC<sup>®</sup> Accession No. PTA-5119), 15C9 (ATCC<sup>®</sup> Accession No. PTA-5106), 16C7 (ATCC<sup>®</sup> Accession No. PTA-5107), 16H9 (ATCC<sup>®</sup> Accession No. PTA-5108), 117.1 (ATCC<sup>®</sup> Accession No. PTA-4567), 325.1 (ATCC<sup>®</sup> Accession No. PTA-5120), 368.1 (ATCC<sup>®</sup> Accession No. PTA-4568), 446.1 (ATCC<sup>®</sup> Accession No. PTA-5549), 501.1 (ATCC<sup>®</sup> Accession No. PTA-4569), 621.1 (ATCC<sup>®</sup> Accession No. PTA-5121), 633.1 (ATCC<sup>®</sup> Accession No. PTA-5122), 654.1 (ATCC<sup>®</sup> Accession No. PTA-5247), 725.1 (ATCC<sup>®</sup> Accession No. PTA-5124), or 776.1 (ATCC<sup>®</sup> Accession No. PTA-4570).

29. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:27.

30. The isolated antibody, or antigen-binding antibody fragment of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:29.

31. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:31.

32. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:33.

33. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:54.

34. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a light chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:56.

35. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:28 .

36. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:30.

37. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:32.

38. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:34.

39. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:53.

40. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:55.

41. The isolated antibody, or antigen-binding antibody fragment, of Claim 29, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:28.

42. The isolated antibody, or antigen-binding antibody fragment, of Claim 30, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:30.

43. The isolated antibody, or antigen-binding antibody fragment, of Claim 31, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:32.

44. The isolated antibody, or antigen-binding antibody fragment, of Claim 32 wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:34.

45. The isolated antibody, or antigen-binding antibody fragment, of Claim 33, wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:53.

46. The isolated antibody, or antigen-binding antibody fragment, of Claim 34 wherein the antibody or antigen-binding antibody fragment comprises a heavy chain variable region that comprises the amino acid sequence depicted in SEQ ID NO:55.

47. An isolated nucleic acid molecule comprising a nucleotide sequence that encodes a variable chain region of the antibody or antigen-binding antibody fragment of any of Claim 29 to 40.

48. The nucleic acid molecule of Claim 41, wherein the nucleic acid molecule comprises the nucleotide sequence of SEQ ID NO:35, 36, 37, 38, 39, 40, 41, 42, 52, 57, 58 or 59.

49. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody, or antigen-binding antibody fragment binds the peptide of Figure 1 with a  $K_d$  of less than about 100nM as measured in a BIAcore Affinity Assay.

50. The isolated antibody, or antigen-binding antibody fragment, of Claim 49, wherein the antibody, or antigen-binding antibody fragment binds the peptide of Figure 1 with a  $K_d$  of less than about 10nM as measured in a BIAcore Affinity Assay.

51. The isolated antibody, or antigen-binding antibody fragment, of Claim 50, wherein the antibody, or antigen-binding antibody fragment binds the peptide of Figure 1 with a  $K_d$  of less than about 1nM as measured in a BIAcore Affinity Assay.

52. The isolated antibody, or antigen-binding antibody fragment, of Claim 51, wherein the antibody, or antigen-binding antibody fragment binds the peptide of Figure 1 with a  $K_d$  of less than about 100pM as measured in a BIAcore Affinity Assay.

53. The isolated antibody, or antigen-binding antibody fragment, of Claim 52, wherein the antibody, or antigen-binding antibody fragment binds the peptide of Figure 1 with a  $K_d$  of less than about 10pM as measured in a BIAcore Affinity Assay.

54. The antibody or antigen-binding antibody fragment of Claim 1, wherein the antibody or antigen-binding antibody fragment is modified by amino acid substitution, deletion, or addition, or a combination thereof, and has the same or an increased affinity for cell-associated CA 125/O772P relative to that of a corresponding unmodified antibody or antigen-binding antibody fragment.

55. The isolated antibody, or antigen-binding antibody fragment, of Claim 1, wherein the antibody or antigen-binding antibody fragment is modified by amino acid substitution, deletion, or addition, or a combination thereof, and wherein the antibody or antigen-binding antibody fragment exhibits the same or an increased serum half-life compared to a corresponding unmodified antibody or antigen-binding antibody fragment.

56. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment mediates lysis of a CA 125/O772P-positive tumor cell in an ADCC assay.

57. The isolated antibody, or the antigen-binding antibody fragment, of Claim 56, wherein the antibody or antibody fragment mediates at least about 10% lysis of a CA 125/O772P-positive tumor cell in an ADCC assay at a 50:1 effector:target ratio at a concentration of 5.0  $\mu$ g antibody or antigen-binding fragment per ml.

58. The isolated antibody, or the antigen-binding antibody fragment, of Claim 56, wherein the antibody or antibody fragment mediates at least about 10% lysis of a CA 125/O772P-positive tumor cell in an ADCC assay at a 25:1 effector:target ratio at a concentration of 5.0  $\mu$ g antibody or antigen-binding fragment per ml.

59. The isolated antibody, or the antigen-binding antibody fragment, of Claim 56, wherein the antibody or antibody fragment mediates at least about 10% lysis of a CA 125/O772P-positive tumor cell in an ADCC assay at a 12.5:1 effector:target ratio at a concentration of 5.0  $\mu$ g antibody or antigen-binding fragment per ml.

60. The isolated antibody, or the antigen-binding antibody fragment, of Claim 56, wherein the antibody or antibody fragment mediates at least about 10% lysis of a CA 125/O772P-positive tumor cell in an ADCC assay at a 12.5:1 effector:target ratio at a concentration of 50 ng antibody or antigen-binding fragment per ml.

61. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment mediates lysis of a CA 125/O772P-positive tumor cell in an complement-dependent cytotoxicity (CDC) assay.

62. The isolated antibody, or the antigen-binding antibody fragment, of Claim 61, wherein the antibody or antibody fragment mediates in a range from about 15% lysis at 5  $\mu$ g/ml antibody or antigen-binding antibody fragment to about 95% lysis at about 0.1  $\mu$ g/ml antibody or antigen-binding antibody fragment.

63. The isolated antibody, or the antigen-binding antibody fragment, of Claim 1, wherein the antibody or antibody fragment inhibits CA 125/O772P-positive tumor growth.

64. A pharmaceutical composition comprising an antibody or an antigen-binding antibody fragment that preferentially binds cell-associated CA 125/O772P polypeptide relative to shed CA 125/O772P polypeptide, and a pharmaceutically acceptable carrier.

65. A pharmaceutical composition comprising a monoclonal antibody or an antigen-binding monoclonal antibody fragment that preferentially binds cell-associated CA 125/O772P polypeptide relative to shed CA 125/O772P polypeptide, and a pharmaceutically acceptable carrier.

66. An article of manufacture comprising packaging material and a pharmaceutical composition comprising an antibody, or an antigen-binding antibody fragment, that preferentially binds cell-associated CA 125/O772P relative to shed CA 125/O772P, and a pharmaceutically acceptable carrier contained within the packaging material, said pharmaceutical composition in a form suitable for administration to a subject.

67. The article of manufacture of Claim 66, further comprising printed instructions regarding the use or administration of the pharmaceutical composition.

68. The article of manufacture of Claim 67, wherein the instructions suggest a dosing regimen for the prevention or treatment of one or more symptoms of a CA 125/O772P-related disorder.

69. The article of manufacture of Claim 67, wherein the instructions suggest a dosing regimen for the prevention or treatment of one or more symptoms of a cell proliferative disorder.

70. The article of manufacture of Claim 69, wherein the instructions suggest a dosing regimen for the prevention or treatment of one or more symptoms of a cancer.

71. The article of manufacture of Claim 70, wherein the instructions suggest a dosing regimen for the prevention or treatment of one or more symptoms of ovarian cancer.

72. The article of manufacture of Claim 66, further comprising a label regarding the use or administration of the pharmaceutical composition.



73. The article of manufacture of Claim 66, wherein the label suggests a dosing regimen for the prevention or treatment of one or more symptoms of a CA 125/O772P-related disorder.

74. The article of manufacture of Claim 73, wherein the label suggests a dosing regimen for the prevention or treatment of one or more symptoms of a cell proliferative disorder.

75. The article of manufacture of Claim 74, wherein the label suggests a dosing regimen for the prevention or treatment of one or more symptoms of a cancer.

76. The article of manufacture of Claim 75, wherein the label suggests a dosing regimen for the prevention or treatment of one or more symptoms of ovarian cancer.

77. A fusion polypeptide comprising an antibody, or an antigen-binding antibody fragment, which preferentially binds cell-associated CA 125/O772P relative to shed CA 125/O772P, operably linked to a heterologous agent.

78. A method for ameliorating a symptom of a CA 125/O772P-related disorder, comprising: administering to a subject in need of said amelioration, an antibody or antigen-binding fragment of an antibody in an amount sufficient to ameliorate a symptom of the cell proliferative disorder, wherein said antibody or antigen-binding antibody fragment preferentially binds cell-associated CA 125/O772P relative to shed CA 125/O772P.

79. The method of Claim 78, wherein the CA 125/O772P-related disorder is a cell proliferative disorder.

80. The method of Claim 79, wherein the cell proliferative disorder is cancer.

81. The method of Claim 80, wherein the cancer is cervical or uterine cancer.

82. The method of Claim 80, wherein the cancer is breast or lung cancer.

83. The method of Claim 80, wherein the cancer is ovarian cancer.

84. The method of Claim 78, wherein the antibody or antigen-binding antibody fragment is a monoclonal antibody or antigen-binding monoclonal antibody fragment.

85. The method of Claim 78, wherein the antibody or antigen-binding antibody fragment is administered at a dose from about 5  $\mu$ g/kg to about 10 mg/kg.

86. The method of Claim 78, wherein the method is practiced as part of a combination cancer therapy.

87. The method of Claim 86, wherein the combination cancer therapy further comprises administration of a chemotherapeutic agent to the subject.

88. The method of Claim 87, wherein the chemotherapeutic agent is paclitaxel or cisplatin.

89. The method of Claim 86, wherein the combination cancer therapy comprises radiation therapy.

90. The method of Claim 78, wherein the antibody is selected from the group consisting of 325.1, 621.1, 633.1, 654.1, 725.1, 8G9, 7F10, 8A1, 8C3, 15C9, 8E3, 8B5, 7G10, 16C7, 7C6, 7H1, 16H9, 7A11, 4E7, 117.1, 368.1, 446.1, 501.1 and 776.1.

91. A method to assist in identifying an antibody, or antigen-binding antibody fragment, that preferentially binds cell-associated CA 125/O772P, comprising:

- (a) incubating an antibody or antigen-binding antibody fragment with a peptide comprising cell-associated CA 125/O772P in the presence of shed CA 125/O772P under conditions that allow binding of the antibody or antigen-binding antibody fragment to said peptide comprising cell-associated CA 125/O772P or shed CA 125/O772P;
- (b) removing shed CA 125/O772P and antibody or antigen-binding antibody fragment not bound to said peptide comprising cell-associated CA 125/O772P;
- (c) measuring the amount of antibody or antigen-binding antibody fragment bound to said peptide comprising cell-associated CA 125/O772P; and
- (d) comparing the amount in (c) to the amount of antibody or antigen-binding antibody fragment that binds to said peptide comprising cell-associated CA 125/O772P in the absence of the shed CA 125/O772P.

92. The method of Claim 91, wherein the peptide comprising cell-associated CA 125/O772P is immobilized on a solid surface.

93. The method of Claim 92, wherein the method is performed in an ELISA format.

94. The method of Claim 91, wherein the shed CA 125/O772P and peptide comprising cell-associated CA 125/O772P are present at about a 25:1 (wt/wt) ratio of shed CA 125/O772P to peptide comprising cell-associated CA 125/O772P.

95. A method to assist in identifying an antibody, or antigen-binding antibody fragment, that preferentially binds cell-associated CA 125/O772P, comprising:

- (a) contacting an antibody, or antigen-binding fragment, with a peptide comprising cell-associated CA 125/O772P in the presence of shed CA 125/O772P under conditions that allow binding of the peptide comprising cell-associated CA 125/O772P to the antibody or antigen-binding antibody fragment;
- (b) removing unbound peptide comprising cell-associated CA 125/O772P;
- (c) measuring the amount of peptide comprising cell-associated CA 125/O772P bound by the antibody, or antigen-binding fragment, and
- (d) comparing the amount measured in (c) to the amount of peptide comprising cell-associated CA 125/O772P the antibody or antigen-binding antibody fragment binds in the absence of shed CA 125/O772P.

96. The method of Claim 95, wherein the amount of shed CA 125/O772P is about a 25-fold (weight/weight) excess amount.

97. The method of Claim 95, wherein the antibody, or antigen-binding antibody fragment is immobilized on a solid surface.

98. The method of Claim 97, wherein the method is performed in an ELISA format.

99. A method to assist in identifying an antibody, or antigen-binding antibody fragment, that preferentially binds cell-associated CA 125/O772P, comprising:

- (a) contacting an antibody, or antigen-binding fragment, with a cell that expresses CA 125/O772P in the presence of an amount of shed CA 125/O772P under conditions that allow binding of the CA 125/O772P to the antibody or antigen-binding antibody fragment;
- (b) removing unbound cells;
- (c) measuring the amount of cells expressing CA 125/O772P bound by the antibody, or antigen-binding fragment, and

- (d) comparing the amount measured in (c) to the amount of cells expressing CA 125/O772P that binds the antibody or antigen-binding antibody fragment in the absence of said amount of shed CA 125/O772P.

100. The method of Claim 99, wherein the amount of shed CA 125/O772P is at least about 0.5 mg/ml.

101. The method of Claim 99, wherein measuring is performed by flow cytometry.

102. The method of Claim 99, wherein the measuring is performed by fluorescence activated cell sorting.

103. A hybridoma that can secrete an antibody of Claim 1.

104. The isolated antibody or antigen-binding fragment of Claim 1 conjugated to a cytotoxic agent.

105. The isolated antibody or antigen-binding fragment of Claim 104, wherein the cytotoxic agent is a radioisotope.

106. The isolated antibody or antigen-binding fragment of Claim 105, wherein the radioisotope is selected from the group consisting of  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{111}\text{In}$ ,  $^{99\text{m}}\text{Tc}$  and  $^{90}\text{Y}$ .

107. The monoclonal antibody of Claim 26 or 27, which is conjugated to a cytotoxic agent.

108. The monoclonal antibody of Claim 107, wherein the cytotoxic agent is a radioisotope.

109. The monoclonal antibody of Claim 108, wherein the radioisotope is selected from the group consisting of  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{111}\text{In}$ ,  $^{99\text{m}}\text{Tc}$  and  $^{90}\text{Y}$ .

110. The pharmaceutical composition of Claim 64 or 65, wherein the antibody or antigen-binding fragment is conjugated to a cytotoxic agent.

111. The pharmaceutical composition of Claim 110, wherein the cytotoxic agent is a radioisotope.

112. The pharmaceutical composition of Claim 111 wherein the radioisotope is selected from the group consisting of  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{111}\text{In}$ ,  $^{99\text{m}}\text{Tc}$  and  $^{90}\text{Y}$ .

113. The method of Claim 78, wherein the antibody or antigen-binding fragment is conjugated from a cytotoxic agent.

114. The method of Claim 113, wherein the cytotoxic agent is a radioisotope.

115. The method of Claim 114, wherein the radioisotope is selected from the group consisting of  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{111}\text{In}$ ,  $^{99\text{m}}\text{Tc}$  and  $^{90}\text{Y}$ .

116. A monoclonal antibody selected from the group consisting of 325.1, 621.1, 633.1, 654.1, 725.1, 8G9, 7F10, 8A1, 8C3, 15C9, 8E3, 8B5, 7G10, 16C7, 7C6, 7H1, 16H9, 7A11, 4E7, 117.1, 368.1, 446.1, 501.1, and 776.1, or an antigen-binding antibody fragment thereof.

117. An antibody or antigen-binding antibody fragment that competes with binding of a monoclonal antibody of Claim 116.

118. A pharmaceutical composition comprising a monoclonal antibody selected from the group consisting of 325.1, 621.1, 633.1, 654.1, 725.1, 8G9, 7F10, 8A1, 8C3, 15C9, 8E3, 8B5, 7G10, 16C7, 7C6, 7H1, 16H9, 7A11, 4E7, 117.1, 368.1, 446.1, 501.1, and 776.1, or an antigen-binding antibody fragment thereof, and a pharmaceutically acceptable carrier.

119. An isolated antibody or antigen-binding antibody fragment that binds to the peptide of Figure 1.